REMARKS

In the Office Action the Examiner objected to claim 4 for insufficient antecedent basis and rejected claims and rejected claims 1-3, 7-14, 17-28, 30, 31, 34-36, 42-46 under 35 U.S.C. 103 for being obvious. Claims 1-3, 7-14, 17-22, 25, 26, 28, 30, 31, 34-36, 44, and 45, remain in the application.

Claim 4 has been amended to correct the issue with antecedent basis.

The rejection for obviousness on claim 1 was based on Koizumi and Kluth. Claim 1 has been amended to substantially include the limitations of claims 23 and 27. The rejection of these claims further included Aronowitz. Koizumi describes implanting germanium at 4E17 into source/drains that are subsequently phosphorus doped. Kluth describes using nickel silicide over arsenic doped silicon. Aronowitz describes implanting germanium at a somewhat lower dose but then uses an oxidation step to force germanium into the underlying silicon to raise the germanium to 70 percent or more. None of these are addressing the issue addressed by applicant of boron doped source/drains having a spiking problem with nickel silicide. The independent claims have all been amended to point out the range of the implant dose for this purpose, that it be for boron doped regions, and that it be nickel silicide. None of the references teach siliciding a germanium doped silicon region. In fact another reference, Murakoshi, that is cited by the Examiner with regard to other claims explicitly describes the purpose of germanium doping as reducing contact resistance. The other references also discuss carrier mobility. Thus, it appears that Murakoshi is teaching that germanium doping was the solution to contact resistance issues, which is to say that Murakoshi is teaching that siliciding can be avoided by using germanium doping. There is nothing in the other references that applicant has found that refutes that. Thus, applicants submit that there is really no incentive to combine Kluth with Koizumi or Aronowitz. Further, Koizumi and Kluth are for N-type doping. Aronowitz does include both P and N but is for high concentrations of germanium.

The Examiner argues that the claimed implant dose is obvious from Koizumi's 4E17 dose because it is obvious to discover the optimum range. Assuming arguendo that discovering the optimum range is obvious, the objective for optimization must be known or at least that optimization of the objective of the prior art lead to the claimed solution. There is nothing in Koizumi or any of the other references cited by the Examiner to suggest that the objective is to

optimize the implant for the purpose of preventing spiking in a boron doped semiconductor region. Aronowitz does provide for a lower dose implant but also a subsequent oxidation that greatly increases the germanium concentration. The issue being addressed by applicant is not being addressed by the prior art. Kluth teaches that nickel silicide has a problem with spiking in arsenic doped silicon, but there is no basis in the other prior art references that would provide a basis for believing that germanium doping would solve that problem, and Kluth makes no suggestion that there is a spiking problem with boron doped (P-type) semiconductors. Further, Kluth attributes roughness as the source of the problem. There is no basis for believing that germanium doping would solve that problem. Implants tend to increase roughness. Accordingly, applicants submit that the independent claims are patentably distinct from the cited references.

The Office Action contains numerous statements characterizing the claims, the Specification, and the prior art. Regardless of whether such statements are addressed by Applicant, Applicant refuses to subscribe to any of these statements, unless expressly indicated by Applicant.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references.

Applicants believe the application is in condition for allowance which action is respectfully solicited. Please contact the below-signed if there are any issues regarding this communication or otherwise concerning the current application.

Respectfully submitted,

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